Southeast Alaska Cloudburst Chronicle

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In This Issue

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Flood season is here! Are you prepared?

—By Zaaron Allen

Autumn has arrived in Southeast Alaska and with that comes the threat of heavy rainfall capable of producing flooding. Most of the major flood events in Southeast Alaska have come between the latter portion of August and end of October. Below is information on how to prepare in advance for a flooding event, safety tips during a flooding situation, and what to do after the event has ended.

How do flash floods occur?

Several factors contribute to flash flooding. The two key elements are the rate of rainfall, and how long the rain lasts. Topography, soil conditions, and ground cover also play an important role.

Flash floods occur within a few minutes or hours of excessive rainfall, a dam or levee failure, or a sudden release of water held by an ice jam. Flash floods can roll boulders, tear out trees, destroy buildings and bridges, and scour out new channels.

Most flash flooding over Southeast Alaska is caused by slow-moving areas of rainfall, repeatedly impacting the same area, causing rapidly rising water levels in the numerous small streams in the region.

Flood Facts

- Floods and flash floods are responsible for nearly half of all weather related deaths.
- Nearly half of all flash flood deaths are automobile related!
- 6 inches of fast-moving flood water can knock a person off their feet.
- Most cars will float in 2 feet of water.

(See FLOODING - page 2)

In Memory of Craig Sempert

Craig Sempert, one of our most active weather spotters, was killed in a diving accident this summer in Ketchikan.

This newsletter is dedicated to Craig for his contribution to the safety of his fellow Southeasterners through his reliable and detailed weather reports.

Our thoughts and prayers are with Craig's family and friends. He will be missed by all.

FLOODING-Cont. from page 1

Terms to Know

Flash Flood Watch

Flash flooding (flooding within 6 hours of the heaviest rainfall) is possible within the watch area. Check preparedness requirements (see "Before the Flood") and be alert for rapidly rising water levels!

Flood Watch

Flooding (6 hours or more after the heaviest rainfall) is possible within the watch area. Check preparedness requirements (see "Before the Flood") and be alert for rising water on area rivers and streams.

Flash Flood or Flood Warning

Flash flooding or flooding has been reported or is imminent– take necessary precautions at once.

Small Stream Flood Advisory

Flooding of small streams, streets, and low-lying areas is occurring or is imminent.

Flash Flood or Flood Statement

Follow-up information regarding a flash flood or flood event.

Rule of Thumb

Head for higher ground and stay away from flood waters!

Before the flood

- Know your flood risk and elevation above flood stage. Be prepared to move to higher ground. Know your evacuation routes.
- Keep your automobile fueled.
- Store drinking water in clean bathtubs and in various containers.
- Keep a stock of food requiring little cooking and no refrigeration.
- Keep a disaster supply kit on hand: first aid kit, canned food & can opener, bottled water, rubber boots & gloves, NOAA Weather Radio, battery powered radio, flashlight, and extra batteries.
- Install check valves in building sewer traps to prevent flood water from backing up into the drains of your home.

When you receive a warning

- Go to higher ground!!! Stay out of dips, low spots, canyons, washes, etc. - any place that is subject to flooding.
- Move to a safe place before access is cut off by flood water.
- Monitor NOAA Weather Radio or emergency broadcast stations for information.

During the flood

- Avoid already flooded and high-velocity-flow areas. If you come upon a flowing stream where water is above your ankles, turn around and find another way.
- If your vehicle stalls, leave it immediately and go to higher ground. Rapidly rising water may sweep a vehicle and its occupants away.
- Don't attempt to drive over a flooded road. The water depth is not always obvious, and the under-water road bed may not be intact.
- Don't let children play around high water and storm drains.

After the flood

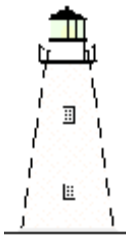
- If food has come in contact with flood waters, throw it out.
- Boil drinking water before use. Pump out wells and test water for purity before drinking. If in doubt, call your local public health agency.
- Do not visit disaster areas. Your presence may hamper rescue and other emergency operations.
- Check and dry electrical equipment before returning it to service.
- Use flashlights, **not** lanterns, torches, or matches, to examine buildings. Flammable items may be inside.
- Report broken utility lines to appropriate authorities.

For further information on Flood Safety and Preparedness:

— **NWS** - Flash Floods and Floods - The Awesome Power!:
http://www.nws.noaa.gov/om/brochures/ffbro.htm

— **American Red Cross**:
http://www.redcross.org/services/disaster/keepsafe/readyflood.html

Seafarers' Spotlight

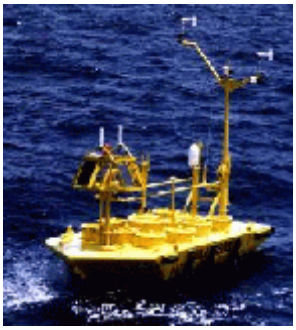


—By Aimee Devaris

Mariners in Alaska can rest a little easier now with the knowledge that a new weather buoy has been deployed in the Fairweather Ground. This high-traffic area in the northeastern Gulf of Alaska is notorious for its erratic winds and perilous sea conditions. The buoy reports hourly marine weather information such as wind speed and direction, air and sea temperature, atmospheric pressure, and detailed wave information such as swell height, significant wave height, period, and steepness.

The Fairweather buoy deployment in July launched a three-year venture involving Coast Guard buoy tender crews and the National Oceanographic and Atmospheric Administration. The project, termed the "Alaska Initiative," was spearheaded by U.S Senator Ted Stevens to install seven new weather data buoys in the Gulf of Alaska.

A crew aboard the U.S. Coast Guard Cutter "Sweetbriar" set the new buoy about 50 nautical miles south of Cape Fairweather. A second buoy was deployed



by the Coast Guard Cutter "Sedge" crew members north of the Barren Islands near the entrance to Cook Inlet in early August. The new buoys will allow mariners to stay informed about weather conditions, resulting in safer voyage-planning and navigation.

NWS meteorologists have been anxiously awaiting this information for a long time. Data gathered from these buoys will help them write more accurate weather forecasts and warnings. Weather information transmitted by the buoys will be added to the computer models that help meteorologists with longer range outlooks in addition to short term forecasts and warnings.

Mariners can listen to current weather observations from the Fairweather Grounds before they venture out. This information, combined with the marine weather forecast will give them a good idea of what they can expect out there. Weather information from the Fairweather buoy can be seen at the National Data Buoy Center web site at www.ndbc.noaa.gov/Maps/Alaska.shtml. The buoy ID number is 46083.

Website Changes Are Coming...

–By Laura Furgione

Through customer outreach and input, we have continually improved our website. Likely sometime this fall, you will notice some significant changes to our website. New federal laws, as well as a desire to create a more consistent look across National Weather Service (NWS) web pages, are the driving force behind the upcoming changes. The new website design will permit better accessibility to those with special needs. Since the new site structure brings a common look to all NWS web pages, users will be able to find the information they are seeking quickly, no matter which NWS site they are visiting.

As we move through this streamlining process, both the site address and its links will change, so your bookmarks will probably need to be adjusted. Weather information, forecasts, and warnings will continue to be the site's focus. You can be assured that we will make every effort to provide the articles and other local information that you have come to expect from us. We appreciate your patience and understanding, and hope you will enjoy the new features coming online soon!

Thank you for using our website . . . and keep an eye out for our new look!

http://pajk.arh.noaa.gov

Winter Weather Awareness Week
October 7-14, 2001

Each year there are many preventable deaths due to Alaska's harsh winter weather. Last year alone, at least seven deaths were directly attributed to winter storms and exposure to winter weather. Many more people perish every year in avalanches, from hypothermia and exhaustion, and in automobile accidents caused by severe winter weather. To urge Alaskans to prepare for the upcoming winter season, Governor Tony Knowles has proclaimed October 7-14, 2001, to be Winter Weather Awareness Week.

The diversity of Alaska's geography creates all types of winter weather that can be hazardous if we have not fully prepared for it. Deep cold can shut down air travel for weeks, disrupting fuel deliveries and cutting off needed medical attention and supplies. Heavy snow accumulations can also disrupt transportation and damage buildings and light aircraft. High winds combined with loose snow can produce blinding blizzard conditions and extreme wind chill temperatures. And intense winter storms can produce hurricane force winds while forcing unprepared mariners to face dangerous sea conditions and freezing spray.

During Winter Weather Awareness Week, you will hear public service announcements each day relating to all types of severe winter weather over the NOAA weather radio and participating commercial radio stations. The information will also be placed on our website at http://pajk.arh.noaa.gov. Please take this opportunity to get ready for the upcoming winter season by preparing emergency survival kits for your home and car and making sure your family has a disaster plan for handling severe winter weather whether you are at home, on the roadways, or in the back country. These simple actions could save your life.

More information about winter weather preparedness is available at http://www.redcross.org/services/disaster/keepsafe/winter.html

Winter Safety

When caught outside in a winter storm, try to find shelter:
- ❄ try to stay dry.
- ❄ cover all exposed parts of the body.

If you can't find shelter:
- ❄ prepare a lean-to, wind break, or snow cave for wind protection.
- ❄ build a fire for heat and to attract attention.
- ❄ place rocks around the fire to absorb and reflect heat.

Do not eat snow: it will lower your body temperature. Melt it first.

When caught in a winter storm in a car or truck:
Stay in your vehicle. Disorientation occurs quickly in wind-driven snow and cold. Run the motor about ten minutes each hour for heat:
- — open a window a little for fresh air to avoid carbon monoxide poisoning.
- — make sure the exhaust pipe is not blocked.

Make yourself visible to rescuers:
- ❄ turn on the dome light at night when running engine.
- ❄ tie a colored cloth (preferably red) to your antenna or door.
- ❄ raise the hood indicating trouble **after** snow stops falling.

Exercise from time to time by vigorously moving arms, legs, fingers, and toes to keep blood circulating and to keep warm.

Winter Definitions

Sleet - Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects. However, it can accumulate like snow and cause a hazard to motorists.

Freezing Rain - Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Even small accumulations of ice can cause a significant hazard.

Wind Chill Temperature - This is the temperature that it "feels like" outside to people & animals, based on the rate of heat loss from exposed skin caused by the combined effects of wind and cold.
(See WINTER - page 6)

Weather Watchers

Southeast's Spotter Network

–By Aimee Devaris

GET READY FOR STORM SEASON! It's time for that soggy transition from summer to winter, and we all know what that means: high winds and heavy rains. The panhandle has already been hit by a couple of storms this season, and the frequency of these events normally increases September through November. Here are some important things to keep in mind when reporting high winds or flooding conditions:

- Use visual cues and damage extent to estimate wind speeds (see new table below).
- Report any weather-related damage you witness or read about in the newspaper even if it's several days after the storm.
- DO NOT drive across flooded roadways, and be especially careful at night if you suspect flooding is occurring.

Becoming a spotter is easy! You can browse through the training information on the web, we can mail you a packet, or you can attend a short 2-hour spotter course. Courses may be scheduled in any community where there is enough interest to satisfy a minimum level of attendance (usually at least 10 people).

If you are interested in becoming a spotter, please give us a call at (907) 790-6803. You will also find more information on the web at http://pajk.arh.noaa.gov/spotter/spot.htm

Estimating Wind Speed by Damage

Wind Speed	Observations
30-44 mph (26-38 kts)	Trees in motion. Light weight objects (e.g., lawn furniture) tossed or toppled.
45-57 mph (39-49 kts)	Large trees bend; twigs, small limbs break and a few larger dead or weak branches may break. Old/weak structures (e.g., sheds, barns) may sustain minor damage (roofs, doors). Buildings under construction may be damaged. A few loose shingles removed from houses.
58-74 mph (50-64 kts)	Large limbs break; shallow-rooted trees pushed over. Semi-trucks overturned. More significant damage to old/weak structures. Shingles, awnings removed from houses; damage to chimneys and antennas.
75-89 mph (65-77 kts)	Widespread damage to trees with large limbs down or trees broken/uprooted. Mobile homes may be pushed off foundations or overturned. Roofs may be partially peeled off industrial/commercial/warehouse buildings. Some minor damage to homes. Weak structures (e.g., farm buildings, airplane hangars) may be severely damaged.
90+ mph (+78 kts)	Many large trees broken and uprooted. Mobile homes damaged. Roofs partially peeled off homes and buildings. Automobiles pushed off the road. Barns, sheds demolished.

A Picture Tells a Thousand Words

–By Laura Furgione

In October 2001, the National Weather Service (NWS) will begin implementation of a new tabular, gridded, and graphical software system. The program is called the Interactive Forecast Preparation System (IFPS). Why should the NWS change its current way of producing forecasts? Because you, the customer, have asked for it. Our customers are demanding forecasts in digital, gridded, and graphical formats.

The IFPS system has sophisticated software and interactive tools which allow the forecasters to interpret and edit gridded fields of sensible weather elements. The gridded fields are initialized using any combination of model forecast, guidance products, or user-generated gridded forecasts from the previous forecaster. The forecaster can then edit the gridded fields and generate products in a tabular, text, or graphical format.

Examples of tabular or graphical forecasts that are already being produced may be viewed at: http://www.nws.noaa.gov/er/mhx/digital/095.htm

A Southeast Frame of Mind

The more rain,
The more rest,
Fair weather's
Not always the best.

New Wind Chill Temperature Index

–By Aimee Devaris

The National Weather Service (NWS) and the Meteorological Services of Canada (MSC) will implement a new wind chill temperature index for the 2001/2002 winter season. The new index is based on the latest advances in science, technology, and computer modeling, and provides an accurate calculation of the danger of frostbite for a variety of wind and temperature conditions.

The old wind chill index was based on experiments involving the freezing of water. The new formula is based on a human face model, with clinical trials to verify and improve the accuracy of the new index. Tests were conducted in a wind tunnel, with participants wearing temperature sensors on their faces. When skin temperature dropped to 23°F, frostbite began to occur in 15 minutes.

The NWS in Juneau will advise you, by placing headlines on the public and short term forecasts, when conditions are such that frostbite may occur in 15 minutes or less. We will issue wind chill **warnings** when conditions reach a threshold where frostbite may occur in less than 5 minutes. Warnings contain information on how to protect yourself from these potentially life-threatening conditions.

Wind chill temperatures given in weather forecasts this winter may seem milder than in the past. For example, an air temperature of 0°F with sustained winds of 25 mph gives a wind chill of -24°F using the new index, but the old index gave a wind chill value of -45°F under these conditions. Remember, this new index is based on the actual impact of cold temperatures and windy conditions on your skin. Knowing the time to frostbite is the key.

(WINTER- Cont. from page 4)

Snow Flurries - Light snow falling for short durations. No accumulation or a light dusting is all that is expected.

Snow Showers - Snow falling at varying intensities for brief periods of time. Accumulation is possible.

Snow Squalls - Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.

Blowing Snow - Wind-driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.

Blizzard - Sustained or frequent gusts greater than or equal to 35 mph *AND* considerable blowing/drifting snow reducing visibilities frequently to less than one quarter mile.

Wind Chill Chart

Temperature (°F)

Wind (mph)	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-25	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite occurs in 15 minutes or less

Heading North? Road Forecast Service Resumes Oct. 1

–By Michael Mitchell

On October 1st, we will resume daily weather forecasts for the Haines Road and the Klondike Highway. The forecasts provide detailed weather information for the Klondike Highway between Skagway, Alaska, and Carcross, British Columbia, and for the Haines Road between Haines, Alaska, and Haines Junction, Yukon Territory. This motoring forecast is issued jointly by the National Weather Service (NWS) in Juneau, Alaska, and the Meteorological Services Canada (MSC) Mountain Weather Centre office in Kelowna, British Columbia. These highways are important routes of commerce between the two countries. When driving through the rugged Coast Mountains the weather can change rapidly between the wet, marine climate of Southeast Alaska and the dry, cold continental climate of British Columbia and the Yukon.

For the most part, the product format will not change. The NWS in Juneau compiles a forecast for the portions of both highways on the Alaska side of the border while the MSC in Kelowna handles forecasting for the Canadian side. The two forecast segments are then com-bined into a single road forecast. The NWS issues the combined version using English units, and the MSC issues an identical version using metric units.

This year, the road forecast will be issued three times daily: the 6 a.m. and 9 p.m. forecasts will be issued for planning purposes.

A morning update at 10 a.m. (local time) will utilize observations gathered during the morning. A variety of sources provide these observations including the Alaska and Yukon Departments of Transportation (DOT), Haines and Skagway Customs offices, and NWS cooperative observers. These observations become available to the forecaster between 7 a.m. and 9 a.m and provide “ground truth.” The Alaska DOT plans to install a road weather infor-mation system which will pro-vide continuous real-time data, further improving forecasts.

Beginning October 1, you can access the Motoring Forecast at http://pajk.arh.noaa.gov/public.htm or by listening to the broadcast on your NOAA weather radio in Haines and Skagway.

New Alaska NOAA Weather Radio Voice

–By Laura Furgione

The National Weather Service, Alaska Region, is making additional efforts to improve the NOAA Weather Radio (NWR) voice. The Voice Concatenation Computer, also known as Starcaster, was developed by Speech Technology Ltd. An evaluation of the new voice is expected to begin October 1, 2001.

The current NWR broadcast uses a "computer synthesized" voice in which all sounds are machine generated. The new Starcaster "concatenated" voice joins phrases recorded by a human to make its broadcast. The recorded phrases are clearer and more easily understood, but the vocabulary is limited by the number of recorded phrases. Therefore some broadcasts cannot be done by this method. The computer synthesized voice does not have this limitation, so it can reliably broadcast all products.

Although the Starcaster voice does not have the extensive vocabulary that the current NWR voice has, its vocabulary list will continue to grow. When the new voice cannot broadcast a forecast due to its limited vocabulary, the current "computer-synthesized" voice will be available for backup. Currently, the Starcaster voice is reporting the forecasts on the Alaska Weather Line. In Juneau, you may listen to the voice by calling the Alaska Weather Line at 790-6850. Areas outside of Juneau can call toll-free at (800) 472-0391.

These NWR improvements are being tested throughout the Alaska Region. Additional voice improvement tests are being conducted throughout the National Weather Service. Our goal is to provide the highest quality product via the most understandable voice. The opinions of our customers regarding the services we provide are most valuable.

Southeast Alaska Winds

By Carl Dierking

with contributions from Robert Kanan

We can't see it directly, but we know it by its effects. We can feel it brush our faces, and we can see and hear it rustle through the trees, or in more severe cases, blow them down. The air around us is an invisible gas, but it moves like a fluid, and when it does, the effects we see, hear, and feel, we call "wind." Around the globe at any given time, air can vary in movement from perfectly still to speeds that are life-threatening. For meteorologists, predicting this daily, and even hourly, variation of wind, where it blows and how strongly, is a constant challenge. Adding major obstacles, such as the mountains, channels, bays, inlets, valleys and ridges of Southeast Alaska makes that challenge seem nearly impossible. For this reason, wind forecasts are primarily focused on major channels such as Lynn Canal, Frederick Sound, Clarence Strait, etc., while referencing areas that differ significantly from the general condition.

Topography can change the direction and speed of the wind in a variety of ways. In Southeast Alaska, some of the more important effects include: channeled winds, gap flow, downslope winds, converging or diverging winds, and land or sea breezes. Knowing a little about how terrain impacts the wind, can help you adapt wind forecasts for your specific area.

October Winds

The south wind brings wet weather;
The north wind, wet and cold together;
The west wind always brings us rain...
The east wind blows it back again.

Channeled Winds

When air is forced to flow along the direction of a pass or through a strait, it is called "channeling." Nearly all winds within Alaska's panhandle are channeled to some degree, and at times may be considerably different from the offshore ocean winds which are not affected by large land masses. In Lynn Canal and Chatham Strait, for example, winds are mainly from the north or south because that is the orientation of those channels. Wider channels will have larger variations but will still have two primary directions.

Air is pushed or pulled through a channel a lot like it is blown or sucked through a straw. We increase air pressure in our lungs to blow air out of the straw and decrease the pressure to suck liquid in. Likewise, air flows from the end of the channel with the highest pressure toward the end with lower pressure. Forecasters at the Weather Service Office in Juneau often look at the difference in pressures at both ends of a channel to estimate its winds and predict how they will change. For instance, one longstanding rule of thumb is to find the pressure difference in millibars between Skagway and Juneau and multiply it by 10 to estimate the winds near Eldred Rock.

Channeling can cause a wide diversity in the intensity of the wind, depending on the orientation of the channel. In extreme cases, strong gales could blow in one channel while winds are light and variable in another channel nearby. The passage of a weather front or a low pressure center can change the pressure field in such a way that one channel's winds increase rapidly while another's decrease. For this reason, it is important to keep abreast of the weather forecast even when winds seem mild, to anticipate potentially dangerous wind changes.

Gap Flow

Air forced through a narrow opening or "gap," will generate stronger winds, in much the same way as pinching a water hose increases the spray. The Taku and Stikine river valleys are the best examples of this: winds often blow stronger out of

(See WINDY - page 9)

(WINDY - Cont. from page 8)

these narrow gaps through the Coast Mountains when the air pressure is higher in Canada. There are countless other areas in Southeast Alaska where constricted channels can cause increased gap winds to occur. Conversely, in areas where channels become wider, the winds will decrease.

Converging and Diverging Winds

When two or more airstreams flow together because of converging channels, the result is similar to gap flow, with stronger winds in the constricted region. The opposite effect occurs when air flowing from a single channel is split into two diverging airstreams, with each of the two having less wind than their source. The North Passage region of Icy Strait can experience enhanced northeast winds when northerlies from the south end of Glacier Bay merge with the easterlies from Icy Strait. Winds out of Taku Inlet are reduced some when they split in Stephens Passage, producing easterlies on the south side of Douglas Island, and northeasterlies past Guard Island.

Downslope Winds

Under special conditions, air that is usually blocked and channeled by the mountains, can spill over some ridges like water flowing over a rock in a river. After the air is displaced upward on the windward side of the ridge, it dips sharply downward on the lee side. These downslope winds are usually much stronger than any nearby channeled or gap winds, and in extreme cases can exceed 100 mph. The most famous of these are the "Taku" winds that affect downtown Juneau, but less dramatic examples are likely occurring at various times elsewhere in the Panhandle. The unique conditions that cause the development of downslope winds come together primarily in the winter, although in rare instances, they have occurred in other seasons.

Headland Winds

Winds that blow alongshore, are squeezed and accelerated as they pass around obstacles, such as headlands. In the immediate downwind side of the headland, there is often an area of lighter winds of varying direction called "eddies" (lee effect). Examples in Southeast Alaska are numerous, such as Gastineau channel near Juneau. South winds are stronger where Thunder Mountain, Blackerby Ridge and Mount Juneau project into the channel, but lighter and more variable just to the northern lee side of these ridges.

Cross-channel Winds

When strong winds blow in a channel that is intersected at approximately 90 degrees by another narrow channel, a local area of low pressure is created near the intersection (Bernoulli effect). This can cause the wind direction to change dramatically in the narrow channel as the pressure rises and falls with the strength of the cross-wind at one end. This occurs in Revillagigdo Channel when strong northeast winds blow from West Behm Canal. The local low pressure area at the intersection of the two channels produces gusty southeast winds at the Ketchikan airport and not the prevailing north to northeast winds observed nearby.

Land and Sea Breezes

When it comes to our atmosphere, as with any gas, temperature and pressure are closely related. Warming the air decreases air pressure, while cooling the air increases it. During the summer, the sun is more effective warming interior land areas than water bodies. This often causes higher afternoon temperatures in Canada than in the Alaskan Panhandle and the nearby ocean waters. As the day progresses, heated air produces lower air pressures, and sea breezes are generated as the air is drawn inland. Lynn Canal, and especially Taiya Inlet, will quite often experience sea breeze effects in the summer.

Land breezes are just the reverse of the sea breeze, occurring mainly at night. Land areas cool more rapidly than water bodies, causing pressures to increase and air to flow outward from land to sea. Nighttime winds can increase down glacier valleys because of this effect.

With topography as dramatic and complex as it is in Southeast Alaska, many of these wind conditions can occur within a few miles of each other. It is easy to see why an understanding of the geography is so important to the understanding of our changing winds.

NOAA Weather Radio Loud & Clear

–By Laura Furgione

The installation of an experimental U.S. Coast Guard (USCG) Weather Broadcast transmitter on the summit of Mt. Robert Barron has been a huge success. This project's success has contributed to the approval of funds for additional high-site transmitters in Alaska. This is the next big step in the National Weather Service (NWS) and USCG partnering effort to expand the NOAA Weather Radio (NWR). The project's main goal is to provide the Alaska maritime community with accurate, timely, and comprehensive weather information.

Althorp Peak is the next high-site scheduled for the installation of an NWR broadcast transmitter. This radio will be located on the Althorp Peninsula of northern Chicagof Island at an elevation of 2400 feet. The intended broadcast area encompasses Glacier Bay, Icy Strait, Cross Sound, and the Outer Coast from Cape Fairweather to Kahz Bay. The scheduled receivers to follow Althorp Peak's installation are Cape Fanshaw (200 feet) in Southern Stephens Passage and Raspberry Island (1962 feet) in the Kodiak Island Archipelago.

The NWS has 16 VHF-FM continuous-broadcast sites from Ketchikan to Kodiak plus Nome and Fairbanks. On average, these sea level transmitters have a 40-nautical-mile radius coverage area. The USCG has 28 VHF-FM high-level sites from Dixon Entrance to Bristol Bay with an average elevation of 2000 feet. Due to these transmitters' elevation, they have an average footprint of about 100 miles radius. By combining the NWS's continuous broadcast with the U.S. Coast Guard's numerous high-level sites and large footprints, the Alaska Maritime Community and many Alaska residents will finally have access to the NWR continuous broadcast.

Southeast Alaska NOAA Weather Radio (NWR) Broadcasts		
Weather Channel 1	162.550 MHz	NWR Juneau, Sitka, and Ketchikan
Weather Channel 2	162.400 MHz	NWR Wrangell, Haines, and Yakutat
Weather Channel 3	162.475 MHz	NWR Craig

Tentative **Southeast Alaska U.S. Coast Guard High-level Site Broadcasts**		
Weather Channel 4	162.425 MHz	Althorp Peak, Cape Fanshaw, and Sukkawan Island
Weather Channel 5	162.450 MHz	Mt. Robert Barron, Zarembo Island, and Duke Island
Weather Channel 6	162.500 MHz	Mud Bay
Weather Channel 7	162.525 MHz	Gravina and Mount McArthur

What's Happening with El Niño and La Niña?

–By Aimee Devaris

El Niño. It used to be that one could hardly watch the news without hearing something about this phenomenon...and with good reason. During 1997-98, El Niño was blamed for everything from droughts, floods and fires to economic woes and even infectious disease outbreaks. El Niño's antithesis, La Niña, also received media attention but to a lesser degree. Lately there has been a relative absence of news relating to either episode.

El Niño and La Niña are ex-treme phases of a climate cycle referred to as El Niño/Southern Oscillation (ENSO). Both terms refer to large-scale changes in sea surface temperature (SST) across the eastern tropical Pacific. Usually, SST ranges from the 60s to 70s/F, while they exceed 80/F in a "warm pool" located in the central and western Pacific. During El Niño, this warm pool expands eastward to cover the tropics. But during La Niña, the easterly trade winds strengthen, and cold upwelling along the equator and the west coast of South America intensifies. This can cause SST along the equator to fall as much as 7/F below normal.

To find out what's happening with ENSO, the best thing to do is get on-line. The Climate Pre-diction Center (CPC), a branch of the NWS, has a very thorough ENSO section (www.cpc.noaa.gov). While your local NWS office monitors atmospheric, marine and hydrologic data and issues weather forecasts out to seven days, the CPC monitors data relating to major climate anomalies and issues climate prediction products that range from a week to an entire season.

According to the CPC, SST has been increasing in the central equatorial Pacific since February. The impact of this warming on global temperature and precipitation patterns depends to a large degree on its intensity. Researchers caution that at this early stage, there is still a great deal of uncertainty. "Although slightly warmer than normal ocean waters are being observed in the equatorial Pacific, current conditions in the tropical Pacific are closer to neutral than either El Niño or La Niña," said CPC meteorologist Dr. Vernon Kousky. "...Slightly warm SST alone does not make an El Niño." Currently, most model predictions indicate a weak or moderate warm episode (El Niño) by the end of 2001 and the beginning of 2002.

Southeast's Jökulhlaups

–By Aimee Devaris

Jökulhlaup. While this term may not look familiar to you, the phenomenon is fairly common. Jökulhlaup, an Icelandic term pronounced *YO-kul-hloip*, refers to a flood resulting from the breaching of a glacier-dammed lake. There are at least two locations in Southeast Alaska where they occur regularly: the Tulsequah Glacier near Juneau and the Salmon Glacier near Hyder.

Glacier-dammed lakes are located between glacier and valley walls, beneath or inside the glacier, or on top of the glacier. The lakes, filled with rainfall and meltwater, may drain abruptly due to a number of factors. The most common reason is a combination of melting and floating of the ice dam by increasing water levels in the lake, allowing water to flow out near the base of the glacier.

These outburst floods do not typically cause significant property damage. However, during large jökulhlaups, minor flooding has occurred on the Taku River, and roads have washed out along the Salmon River. Also, deposits of debris and sediments result in changes to the river channels during and after the flood which can make the rivers dangerous to navigate.

Jökulhlaups are difficult to predict due to seasonal variations in local weather patterns, but some events may be anticipated. The U.S. Geological Survey has a stream-gaging station near the headwaters of the Taku River, and data can be monitored at their website http://ak.water.usgs.gov. Based on these observations, the NWS issues flood statements for the Taku River to help inform mariners, cabin owners and other recreational users when the outburst floods occur.